

PROCEEDINGS
OF THE
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DESCRIPTIONS OF ELEVEN NEW SPECIES AND
SUBSPECIES OF VOLES.

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The following brief descriptions of new species and subspecies of *Microtus* are here published in advance of a more extended paper on the group, in which all the known American species are discussed. All of the new forms here described are in the Biological Survey Collection and the private collection of Dr. C. Hart Merriam, both in the U. S. National Museum.

***Microtus dutcheri** sp. nov.**

Type from Big Cottonwood Meadows, near Mt. Whitney, Calif. (10,000 ft. alt.). No $\frac{29769}{41848}$, ♂ ad., U. S. Nat. Mus., Biological Survey Coll. Collected July 10, 1891, by B. H. Dutcher. Orig. No. 69.

General characters.—Size rather small; tail short; ears small, nearly concealed by fur; colors dark above and below; lips (and usually nose) white; hip glands present in adult males.

Color.—*Summer pelage*: Above, dark bistre with brown tips to the long hairs; below, dull cinnamon or buffy-brown; feet whitish or plumbeous-gray; tail bicolor, whitish below, brown or blackish above; lips and usually tip of nose white. *Winter pelage* unknown. *Young*, dull brown above and scarcely lighter below; feet and tail blackish; lips and nose usually white.

Cranial characters.—Skull similar to that of *M. montanus*, but differing in many details; rostrum slightly longer; bullæ smaller and less globular; lateral pits of palate shallower; dentition the same.

Measurements.—Type, ♂ ad.: Total length 167; tail vertebræ 35; hind foot 20. Average of 10 adult specimens from type locality: Total length

* Named in honor of Dr. B. H. Dutcher, who collected the type series.

163; tail vertebræ 37; hind foot 20.6. *Skull of type*: Basal length 27.4; nasals 8; zygomatic breadth 16.7; mastoid breadth 12.2; alveolar length of upper molar series 6.5.

***Microtus insularis* sp. nov.**

Type from Great Gull Island, New York, No. $\frac{4952}{708}$, ♂ im., Merriam Coll. Collected Aug. 6, 1888, by B. H. Dutcher.

General characters.—Size of *pennsylvanicus*; colors darker; skull shorter and wider with spreading zygoma and deep prezygomatic notches.

Color.—*August pelage*: Above, dark yellowish bister heavily mixed with black hairs, darkest on nose and face; belly dusky, washed with cinnamon; feet blackish; tail black above, color of belly below.

Cranial characters.—The skull differs from that of *pennsylvanicus* in shorter, wider brain case; wider and more abruptly spreading zygomatic arches; broader zygomatic shield; smaller audital bullæ; palate short with a median point or spur and deep lateral pits. Posterior upper molar with second inner and outer angles approximately opposite and confluent; dentition otherwise similar to that of *pennsylvanicus*.

Measurements.—Type, measured from dry skin: Tail 29; hind foot 20. Skull, No. 43969, from Little Gull Island: Basal length 26; zygomatic breadth, 16.2; mastoid breadth 12.3; alveolar length of upper molar series 6.8.

***Microtus angusticeps* sp. nov.**

Type from Crescent City, California. No. $\frac{17087}{4008}$, ♂ ad., U. S. Nat. Mus., Biological Survey Coll. Collected June 16, 1889, by T. S. Palmer. Orig. No. 151.

General characters.—Smaller and darker than typical *mordax*, with very narrow, slender skull and small audital bullæ.

Color.—*Summer pelage*: Upper parts dark bister, lined with black hairs, darkest on face and nose; sides paler; belly washed with creamy white; feet plumbeous-gray; tail distinctly bicolor, blackish above, soiled white below.

Cranial characters.—Skull small and very narrow, distinctly ridged in adults; nasals projecting in front of incisors; incisive foramina short; audital bullæ very small and constricted; coronoid notch of mandible narrow; incisors slender; molars small with narrow, sharp angles; enamel pattern as in *M. mordax*.

Measurements.—Type, ♂ ad.: Total length 170; tail vertebræ 56; hind foot 22. *Skull of type*: Basal length 23.4; nasals 7.6; zygomatic breadth 13.5; mastoid breadth 10.8; alveolar length of upper molar series 6.

***Microtus nevadensis* sp. nov.**

Type from Ash Meadows, Nye Co., Nevada. No. $\frac{26377}{4251}$, ♀ ad., U. S. Nat. Mus., Biological Survey Coll. Collected March 2, 1891, by E. W. Nelson. Orig. No. 577.

General characters.—Size large; ears small; tail rather short; fur coarse and lax; colors dark; hip glands conspicuous in adult males. Skull massive and angular; incisive foramina narrow and closing to a point posteriorly.

Color.—*March specimens*: Above dark sepia or bister, much obscured by blackish hairs; sides lighter; belly smoky gray; feet dark gray; tail indistinctly bicolor, blackish above, gray or brownish below; lips usually white; tip of nose in adult usually whitish. Young with a blackish dorsal stripe and dusky feet and tail.

Cranial characters.—Skull heavy, angular, and much ridged; frontals high; rostrum bent downward; incisive foramina short, rather narrow and constricted to a point posteriorly; dentition heavy; upper incisors curved abruptly downward; first upper molar with 5 closed triangles; second with 4 triangles in 8 out of 16 specimens; in the other 8, with a slight inner lobe or loop at base of posterior triangle; third with anterior crescent, three closed triangles and a posterior loop with two inner lobes or horns.

Measurements.—*Type specimen*: Total length 210; tail vertebræ 55; hind foot 25.5. Average of 8 specimens from type locality: Total length 176; tail vertebræ 47; hind foot 23. *Skull of type*: Basal length 32; nasals 10.2; zygomatic breadth 19.3; mastoid breadth 14.3; alveolar length of upper molar series 8.

***Microtus nevadensis rivularis* subsp. nov.**

Type from St. George, Utah, No. $\frac{5}{3}\frac{17}{6}\frac{2}{7}$, ♂ ad., Merriam Coll. Collected Jan. 6, 1889, by Vernon Bailey. Orig. No. 493.

General characters.—Smaller and lighter colored than its nearest relative, *M. nevadensis*; skull less rigid and angular; bullæ larger; incisive foramina longer and narrower; ears small, nearly concealed by fur.

Color.—*Winter pelage*: Upper parts dull bister, darkened with blackish tipped hairs (similar to *californicus*); sides scarcely paler; belly washed with whitish; feet dull grayish; tail bicolor, grayish below, blackish above. Young darker than adults, but not black backed.

Cranial characters.—Skull smaller and slenderer than skulls of *nevadensis* of equal age; auditory bullæ much larger and fuller; anterior end of basioccipital narrower; incisive foramina narrower and actually as well as relatively longer; angular process of lower jaw longer and slenderer; incisors much slenderer; molar pattern essentially the same.

Measurements.—*Type*: Total length 179; tail vertebræ 48; hind foot 23. *Skull of type*: Basal length 28.2; nasals 8.3; zygomatic breadth 17; mastoid breadth 13.3; alveolar length of upper molar series 7.3.

***Microtus nanus canescens* subsp. nov.**

Type from Conconully, Washington. No. 90577, ♂ ad., U. S. Nat. Mus., Biological Survey Coll. Collected Sept. 12, 1897, by J. Alden Loring. Orig. No. 4654.

General characters.—Like *nanus* but paler, clearer gray; skull with larger bullæ and greater mastoid breadth; zygomatic arches less widely spreading; upper incisors bent more abruptly downward. Hip glands conspicuous in adult males.

Color.—*Summer pelage:* Above, clear dark grayish, formed by pale buffy and black tipped hairs; sides shading to lighter gray and belly to white; feet dark gray; tail bicolor, grayish below; blackish above.

Cranial characters.—Skull slightly narrower and more elongate than in *nanus*; interparietal averaging longer; bullæ decidedly larger and fuller; mastoid breadth relatively greater; incisors scarcely reaching beyond nasals; molar pattern as in *nanus*.

Measurements.—*Type:* Total length 149; tail vertebræ 42; hind foot 20. *Skull of type:* Occipital condyle to anterior base of molars 17.4; posterior tip of nasals to foramen magnum 19.2; zygomatic breadth 15; mastoid breadth 12.3; alveolar length of upper molar series 6.3.

***Microtus montanus arizonensis* subsp. nov.**

Type from Springerville, Arizona. No. $\frac{24778}{2178}$, ♂ ad., U. S. Nat. Mus., Biological Survey Coll. Collected Nov. 7, 1890, by E. W. Nelson. Orig. No. 153.

General characters.—Similar to *M. montanus*, but brighter and more ferruginous; lateral pits of palate shallower.

Color.—October and November pelage: Above, yellowish or rusty brown; belly washed with white; feet dark grayish; tail bicolor, grayish below; blackish above; lips whitish. Slightly immature specimens are a little duller in color than adults.

Cranial characters.—Skull very similar to that of *montanus*, but easily distinguished by the flatter palate with shallower lateral pits, and by thicker pterygoids; condyloid process of mandible slightly shorter; dentition not different.

Measurements.—*Type:* Total length 184; tail vertebræ 55; hind foot 20. Average of 7 specimens from type locality: Total length 158; tail vertebræ 41; hind foot 20.6. *Skull of type:* Basal length 27.3; nasals 8; zygomatic breadth 16; mastoid breadth 12.2; alveolar length of upper molar series 6.5.

***Microtus pennsylvanicus labradorius* subsp. nov.**

Type from Ft. Chimo, Ungava, Labrador. No. $\frac{5481}{5581}$, ♀ ad., Merriam Coll. Collected Nov. 15, 1882, by L. M. Turner.

General characters.—Size and proportions approximately as in *Microtus drummondi*. Skull flatter with much smaller audital bullæ and more protruding upper incisors.

Color.—(Much changed by alcohol): Above, dark brownish; belly whitish; tail bicolor; feet pale.

Cranial characters.—Skull flattened, not much ridged or angled; post-orbital ridge prominent; nasals short, cuneate, and scarcely reaching

base of incisors; audital bullæ small; incisive foramina short; first upper molar usually with a posterior lobe on inner side; molar pattern otherwise as in *pennsylvanicus*. The skull is readily distinguishable from either *drummondi* or *fontigenus* by the protruding incisors and small audital bullæ.

Measurements.—Type, ♀ ad., measured from alcohol: Total length 139; tail vertebræ 39; hind foot 20. Average of 7 specimens from type locality, measured from alcohol: Total length 137; tail vertebræ 37; hind foot 19. *Skull of type*: Basal length 24.3; nasals 6.7; zygomatic breadth 14.4; mastoid breadth 11; alveolar length of upper molar series 6.2.

***Microtus californicus vallicola* subsp. nov.**

Type from Lone Pine, Inyo Co., California. No. $\frac{321111}{111111}$, ♀ ad., U. S. Nat. Mus., Biological Survey Coll. Collected Dec. 23, 1890, by E. W. Nelson. Orig. No. 149.

General characters.—Similar to *M. californicus* but averaging slightly larger and darker; proportions the same.

Color.—*Summer pelage*: Upper parts dull sepia, darkened by black tipped hairs—darker and with less yellowish suffusion than in *californicus*; below dull grayish or smoky plumbeous; feet dusky; tail bicolor, grayish below; blackish above. *Winter pelage*: darker throughout, with black hairs of back longer and more conspicuous.

Cranial characters.—Skull like that of *californicus*, but audital bullæ usually smaller; occiput more abruptly truncate; nasals reaching nearer to tips of premaxillæ; middle upper molar with lobe at base of 4th triangle often developed into a loop.

Measurements.—Type, ♀ ad.: Total length 200; tail vertebræ 57; hind foot 23. Average of 7 specimens from type locality: Total length 188; tail vertebræ 56; hind foot 23. *Skull of type*: Basal length, 29.4; nasals 9.5; zygomatic breadth 17.6; mastoid breadth 13.4; alveolar length of upper molar series 7.4.

***Microtus pinetorum nemoralis* subsp. nov.**

Type from Stilwell (Boston Mts.), Indian Territory, No. 87246, ♀ ad., U. S. Nat. Museum, Biological Survey Coll. Collected April 7, 1897, by J. Alden Loring. Orig. No. 3905.

General characters.—Size, largest of the subgenus *Pitymys* in the United States; ears large; fur long and coarse; colors duller than in *pinetorum*, but not so dark as in *scalopsoides*.

Color.—Upper parts dull chestnut, slightly lined with blackish tipped hairs on back and rump, becoming paler on sides; belly washed with cinnamon rufous over the plumbeous underfur; tail indistinctly bicolor, agreeing with dorsal and ventral colors of body; feet thinly clothed with pale buffy or sometimes dusky hairs.

Cranial characters.—Skull large and relatively elongated; supraoccipital sloping; interparietal narrow; mastoids and audital bullæ large and pro-

jecting farther back than in *pinetorum*; palate often with a posterior point projecting into the U-shaped interpterygoid fossa; molar series long; third upper molar with three tightly closed triangles and an irregular posterior loop; first lower molar with opposite reëntrant angles meeting behind the anterior loop.

Measurements.—Type specimen: Total length 130; tail vertebræ 24; hind foot 18. Average of five females and five males from type locality: Total length 135; tail vertebræ 25; hind foot 18.1. *Skull of type:* Basal length 25.3; nasals 7.7; zygomatic breadth 16.5; mastoid breadth 13.4; alveolar length of upper molar series 7.

***Microtus pinetorum auricularis* subsp. nov.**

Type from Washington, Miss., No. $\frac{34062}{11332}$, ♂ ad., U. S. Nat. Mus., Biological Survey Coll. Collected May 26, 1892, by Vernon Bailey. Orig. No. 3649.

General characters.—Size small, about equalling *pinetorum*; ears very large for a *Pitymys* and conspicuous above fur; colors dark and rich; fur short and dense like that of *pinetorum*.

Color.—Upper parts dark rich chestnut darkened by dusky tipped hairs; under parts washed with paler chestnut over dark under fur; projecting tip of ear with scattered dusky hairs; tail not bicolor, scarcely darker above, like the back or slightly darker; feet dull brownish.

Cranial characters.—Skull like that of *pinetorum* in general form and characters, but interpterygoid fossa normally U-shaped instead of V-shaped; third upper molar with three closed triangles; first lower molar with first pair of reëntrant angles meeting behind anterior loop.

Measurement.—Type: Total length 120; tail vertebræ 22; hind foot 16. *Skull of type:* Basal length 22.3; nasals 7; zygomatic breadth 15.2; mastoid breadth 12.3; alveolar length of molar series 6.